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VOWEL HARMONY IN DEGEMA, NIGERIA

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ABSTRACT Degema has a ten-vowel system in which vowels can be divided into two neat sets of five each, distinguished by tongue root. This paper clarifies how vowels of both sets are restricted from co-occurring in simple words and presents a detailed examination of vowel harmony across morpheme boundary, showing that vowels in affixes harmonize with vowels in roots. It also illustrates how vowels in proclitics and enclitics harmonize with host vowels in a clitic=host (=clitic)/host=clitic combination. Similarly, it shows that the vowels in some possessive pronouns and demonstrative nominals harmonize with vowels in the head noun in a noun-modifier construction, and that the vowels in some adverbs agree with vowels in neighboring morphemes.

Key Words: Advanced tongue root; Affixes; Clitics; Degema; Vowel harmony.

INTRODUCTION

Degema is an endangered Delta Edoid language of the Niger-Congo phylum. It has two highly mutually intelligible dialects, Usokun and Atala, which are spoken in Usokun-Degema and Degema Town communities, respectively, in the Degema Local Government Area of Rivers State in Nigeria. The Degema-speaking population is slightly larger than 20,000 (based on 1991 Nigerian population census figures). The linguistic data in this paper were drawn from the Usokun dialect. The following sections examine the phenomenon of vowel harmony as it operates in simple words and across morpheme boundary. The description is eclectic, meaning that the analysis used here is not based on any particular linguistic theory.

VOWELS

Degema is an Edoid language that still has a ten-vowel system. The vowels in other Edoid languages have been reduced to nine in Isoko and Eruwa, eight in Ibilo, and seven in Urhobo and Oloma (Elugbe, 1986); in all these languages, the vowel [ə] is among those that have merged with others. Degema has ten phonemic vowels: /i, ɪ, e, ɛ, a, ə, ɔ, o, u, u/.

Vowel Harmony

Thomas (1966) was probably the first to refer to Degema as a ‘vowel

harmony' language, and subsequent references have been made by Thomas and Williamson (1967), Elugbe (1976; 1986), Kari (1995a; 1997; 2003; 2004), and Fulop et al. (1998). Degema's vowel harmony is the advanced tongue root (ATR)⁽¹⁾ type of harmony discussed by Lindau (1975), in which the size of the pharynx, accompanied by a simultaneous upward or downward movement of the larynx, distinguishes two sets of vowels: expanded and non-expanded. Expanded vowels are produced by pushing the root of the tongue forward, accompanied by a simultaneous lowering of the larynx. These actions increase the size of the pharynx. In contrast, non-expanded vowels are produced by pulling the root of the tongue backwards, accompanied by a simultaneous rising of the larynx. These actions result in a decreased pharynx size.

Degema vowels can be neatly divided into two sets of five, i.e., five expanded and five non-expanded, as shown below in example (1).

(1)	Expanded	Non-expanded
	i u	ɪ ʊ
	e o	ɛ ɔ
	ə	ɑ

1. Vowel Harmony in Simple Words

In Degema, vowels in simple words are drawn exclusively from either the expanded or the non-expanded set. In other words, a simple word contains no co-occurrence of vowels from both sets (cf. Williamson, 1984: 23), as shown below in example (2).

(2)	Set A (expanded vowels)	Set B (non-expanded vowels)
ə	kpuká ⁽²⁾ 'move like a maggot' *kpuká	a ɗaré 'pour' *ɗaré
e	ɗerí 'know' *ɗerí	ɛ kperú 'be bloated' *kperú
i	ɓiné 'ask/beg' *ɓiné	ɪ kijé 'give' *kijé
o	kpotí 'bring together (by way of adding)' *kpotí	ɔ ɗóné 'endure' *ɗóné
u	βuné 'slit stomach and take out intestines' *βuné	ʊ muré 'light (a fire)' *muré

Example (2) shows that vowels in the words in Set A are drawn exclusively from the expanded set, while those in Set B are drawn exclusively from the non-expanded set. No given simple word contains a mixture of vowels from both sets, which explains why the starred forms in both sets are ungrammatical. Exceptions to morpheme-internal vowel harmony include some borrowed words from English, as shown below in example (3).

- | | | |
|-----|----------|----------------|
| (3) | bájbul | ‘the Bible’ |
| | básíkóol | ‘bicycle’ |
| | ángísófu | ‘handkerchief’ |

2. Vowel Harmony across Morpheme Boundary

The following discussion will, among other things, examine vowel harmony as it applies between affixes and roots, clitics and hosts, some possessive pronouns and head, some object pronouns, and some adverbs and the preceding word.⁽³⁾

2.1. Vowel Harmony between Affixes and Stems

Most nouns in Degema consist of a stem and a vowel prefix belonging to the same harmonic set as the stem vowels. Elugbe (1976: 226) reported, “if a stem vowel belongs to a particular set, then any prefix attached to it will also be from the same set”; this is demonstrated below in example (4).

- | | | | |
|-----|----------------------|------------------|-----------------------|
| (4) | a-kó | ‘canoe’ | *ə-kó |
| | á-‘gbó | ‘chewing sticks’ | *á-‘gbó |
| | e-ní | ‘elephant’ | *e-ní |
| | ε-sú ⁺ wá | ‘hoe’ | *ε-sú ⁺ wá |
| | i-ní | ‘name’ | *i-ní |
| | ɪ-fáɪ | ‘belly’ | *ɪ-fáɪ |
| | o-dʒí | ‘thief’ | *ɔ-dʒí |
| | ɔ-dě ⁺ dě | ‘chief’ | *o-dě ⁺ dě |
| | ú-dó ⁺ nó | ‘in-law’ | *ú-dó ⁺ nó |
| | u-bó | ‘hand’ | *u-bó |

In example (4), the starred forms are ungrammatical because prefixes and stems belong to differing harmonic sets.⁽⁴⁾

Derivational affixes,⁽⁵⁾ like the prefixes in example (5), also harmonize with their respective stems. Consider examples (5)–(8).

- | | | | | | | | |
|-----|--------|----------------|-----|---|----------------------|-----------------------|-----|
| (5) | mará | ‘yawn’ | (v) | > | ɪ-má ⁺ rá | ‘yawn’ | (n) |
| | siré | ‘run’ | (v) | > | ɪ-sí ⁺ ré | ‘run’ | (n) |
| | sóm | ‘be good’ | (v) | > | ú-‘sí | ‘beauty’ | (n) |
| | dér | ‘be long’ | (v) | > | ú-‘dér | ‘length’ | (n) |
| (6) | teβtéβ | ‘be short’ | | > | ε-teβtéβ | ‘ones that are short’ | |
| | godó | ‘be long’ | | > | e-godó | ‘ones that are long’ | |
| | kambí | ‘be small’ | | > | ɔ-kambí | ‘one that is small’ | |
| | dumɖúm | ‘be blunt’ | | > | o-dumɖúm | ‘one that is blunt’ | |
| (7) | dúw | ‘be soft’ | | > | duw-esé | ‘cause to be soft’ | |
| | sín | ‘climb’ | | > | sɪn-esé | ‘cause to climb’ | |
| | gím | ‘pin’ | | > | gim-ené | ‘pin oneself/itself’ | |
| | dí | ‘eat’ | | > | dí-ené | ‘eat oneself’ | |
| | gbé | ‘go (finally)’ | | > | gbe-βíríj | ‘go many times’ | |
| | tú | ‘be burnt’ | | > | tú-βíríj | ‘be burnt many times’ | |
| | bí | ‘watch’ | | > | bɪ-βeɪɲmé | ‘watch each other’ | |
| | sú | ‘push’ | | > | su-βeɪɲiné | ‘push each other’ | |

(8)	ḡól	‘hold’	>	u-ḡó¹l-ám ⁽⁶⁾	‘holding’
	ḡén	‘look’	>	u-ḡé¹n-ám	‘looking’
	dúm	‘create’	>	o-dú¹m-ám	‘creator’
	hór	‘sharpen’	>	o-hó¹r-ám	‘sharpener’
	kój	‘be heavy’	>	u-kó¹j-á	‘state of being heavy’
	bí	‘be black’	>	u-bí¹-á	‘state of being black’

Examples (5)–(8) reveal that in Degema, prefixes and circumfixes of deverbal nouns and suffixes harmonize with the stem with respect to \pm ATR, unlike in Kalabari⁽⁷⁾ (Akinlabi, 1995), where only some prefixes and no suffixes harmonize with root morphemes. In each of the above examples, affixes have two allomorphs depending on the stem to which they are attached. The quality of stem vowel(s) determines the harmonic set to which the vowels in affixes belong. In other words, if stem vowels are +ATR, the vowels in affixes attached to the stem will also be +ATR. Conversely, if stem vowels are –ATR, then the vowels in affixes will also be –ATR. In this way, Degema exhibits the type of vowel harmony referred to by van der Hulst and van de Weijer (1995: 496) as ‘stem-controlled’ harmony.

2.2. Vowel Harmony in the Noun Phrase

This subsection examines vowel harmony in the noun phrase (NP), especially the behavior of possessive pronouns, demonstrative nominals, and the modifying negative adverb with respect to harmonic relationships with the modified head.

(9) a.	uḡi	mée	‘my book’	b.	úbi	mée	‘my palm kernel’
	book	my			palm	kernel	my
c.	asama	wóo	‘your shirt’	d.	úgbo	wóo	‘your chewingstick’
	shirt	your (sg)			chewing-stick	your (sg)	
e.	aḡi	nóoŋ ^w	‘his leg’	f.	esen	nóoŋ ^w	‘his fish’
	leg	his			fish	his	
g.	εḡuŋ	néni	‘our goat’	h.	íḡa	néni	‘our oysters’
	goat	our			oysters	our	
i.	uto	máaŋ	‘your land’	j.	ətonw	móəŋ	‘your wrappers’
	land	your (pl)			wrapper	your (pl)	
k.	εfen	ḡáaw	‘their bird’	l.	ímo	ḡáəw	‘their children’
	bird	their			children	their	

Example (9) reveals that first person singular, second person plural, and third person plural possessive pronouns agree with the modified head in \pm ATR. In other words, the modified head determines the harmonic set to which the vowels in these pronouns belong.

The examples below clarify the relationship between demonstrative nominals and the word they modify, in terms of \pm ATR. Two types of demonstrative

nominals exist, proximal and distal, and these intersect with number, singular or plural. In isolation, demonstrative nominals consist of a stem and a number-marking prefix. When demonstratives modify nouns, however, their prefixes are dropped,⁽⁸⁾ making the modified noun the sole expresser of number (see Kari, 2004: 93ff for a detailed discussion of demonstratives).

- | | | | | | |
|---------|------------|--------------|----|---------------|------------------|
| (10) a. | ómɔ náa | ‘this child’ | b. | ímo náə | ‘these children’ |
| | child this | | | children this | |
| (11) a. | áɓuwa jóɔ | ‘that dog’ | b. | íɓuwo jóɔ | ‘those bones’ |
| | dog that | | | bones that | |

Comparison of 10a with 10b and 11a with 11b reveals that only vowels in proximal demonstratives harmonize with those of the head, which the demonstrative modifies.

The next examples clarify the harmonic relationship between a modifying negative adverb and the nominal it modifies.

- (12) owéj káə
 person not even
 ‘nobody’ (lit. not even a person)
- (13) ɔβu káa
 one not even
 ‘none’ (lit. not even one)

Examples (12) and (13) reveal that the vowels in the negative adverb are determined by the \pm ATR quality of the modified nominal. In (12), the vowels in the negative adverb are +ATR because those in the modified nominal are +ATR, whereas in (13) the vowels are –ATR because those in the modified nominal are –ATR.

2.3. Vowel Harmony in the Verb Phrase

Elugbe (1986: 53) reported that, “verbal constructions also follow rules of vowel harmony so that the set to which the vowel of the verb stem belongs determines the selection of vowel for pronominal⁽⁹⁾ and other parts of the verbal construction, such as the tense/aspect markers.” Thomas (1966: 191) also noted that, “there is vowel harmony throughout the verb word....”

2.3.1. Vowel Harmony between Proclitics and Verbs

In Degema, proclitics (subject clitics) always occur before verbs,⁽¹⁰⁾ as shown in examples (14)–(16).

- (14) mée mɪ=món ójɪ.
I 1SgSCL=see.FACT him
'I saw him'
- (15) ójɪ ó=ma kotu me.
he 3SgSCL.NEG=IMAX call me
'He has not called me yet'
- (16) ɓaw e=képéβ=n úbí úgbɛɲ.
they 3PlSCL=plant=FACT seed mango
'They planted a mango seed'

Examples (14)–(16) show that the host determines the harmonic set to which proclitics belong. In examples (14) and (15), the proclitics are –ATR because the host vowels are –ATR, while in (16) the proclitic is +ATR because the host vowels are +ATR (see Kari, 2004 and forthcoming for a detailed description of the different forms of proclitics).

2.3.2. Vowel Harmony between Enclitics and Verbs/Pronouns

In Degema, enclitics (non-subject clitics) occur after verbs and transitive object pronouns, which begin with a consonant, as shown in examples (17)–(20).

- (17) ɔ=sáʔ=án.
3SgSCL=kick=FACT
'He kicked (something)'
- (18) ɔ=sá méʔ=én.
3SgSCL=kick me=FACT
'He kicked me'
- (19) o=képéβʔ=té.
3SgSCL=plant=PE
'He has planted (something)'
- (20) o=képéβ ɓáwʔ=té.
3SgSCL=plant them=PE
'He has planted them'

Examples (17)–(20) reveal that the vowels in enclitics become either +ATR or –ATR, depending on the harmonic set to which the vowels in the host belong. In examples (17) and (18), the factative enclitic vowel is –ATR because the verbal and pronominal hosts have –ATR vowels. In contrast, in examples (19) and (20), the vowel of the perfect enclitic is +ATR because the verbal and

pronominal hosts have +ATR vowels (see Kari, 2003; 2004, and forthcoming for a detailed discussion of the different forms of enclitics).

2.3.3. Vowel Harmony between Object Pronouns, Adverbs, and the Preceding Word

Across morpheme boundary, some object pronouns and some adverbs respond to vowel harmony. Object pronouns that respond to vowel harmony include first person singular, second person plural, and third person plural, while adverbs that respond to vowel harmony include locative *ḃánə/ḃána* ‘here’ and *ḃáə/ḃáa* ‘there’ as shown in examples (21)–(26).

- (21) *o=fir* *mé⁺=én.*
 3SgSCL=press me=FACT
 ‘He pressed me’
- (22) *ɔ=món* *mé⁺=én.*
 3SgSCL=see me=FACT
 ‘He saw me’
- (23) *mi=ḃól* *má⁺áj.*
 1SgSCL=hold you.FACT
 ‘I held you (pl)’
- (24) *mi=fár* *má⁺áj.*
 1SgSCL=tie you.FACT
 ‘I tied you (pl)’
- (25) *á=kotu* *ḃáəw.*
 2PlSCL.NEG=call them.FACT
 ‘You (pl) did not call them’
- (26) *á=ḃom* *ḃáaw.*
 2PlSCL.NEG=beat them.FACT
 ‘You (pl) did not beat them’

Examples (21)–(26) reveal that the vowels in first person singular, second person plural, and third person plural object pronouns are determined by the harmonic set to which the vowels in the preceding words belong. In examples (21), (23), and (25), the vowels in these object pronouns are +ATR because the vowels in the preceding words are +ATR, whereas in examples (22), (24), and (26), the vowels are –ATR because the vowels in the preceding words are –ATR.

Examples (27)–(30) clarify locative adverbs.

- (27) *á=dúw* *ḃáə.*
 2PlSCL=follow there
 ‘Follow that way!’

- (28) á=tá báa.
2PlSCL=go there
'Go there!'
- (29) á=ji bónə.
2PlSCL=come here
'Come here!'
- (30) á=gén bána.
2PlSCL=look here
'Look in this direction!'

Examples (27)–(30) reveal that the vowels in locative adverbs are determined by the harmonic set to which the vowels in the preceding words belong. In examples (27) and (29), the vowels in these adverbs are +ATR because the vowels in the preceding words are +ATR, whereas in examples (28) and (30) the vowels are –ATR because the vowels in the preceding words are –ATR.

CONCLUSION

This paper examined vowel harmony in Degema as it operates within simple words and across morpheme boundary. Degema has a complete ten-vowel harmony system, and this paper has clarified how, in most cases, the vowels in a given word are drawn exclusively from one set. It also revealed that across morpheme boundary, the vowels in affixes, clitics, possessive, and object pronouns (especially first person singular, second person plural, and third person plural pronouns), and vowels in the modifying negative adverb are determined by the harmonic set to which the vowels in neighboring morphemes belong.⁽¹¹⁾

NOTES

- (1) This paper uses the following abbreviations: 1SgSCL = first person singular subject clitic, 2SgSCL = second person singular subject clitic, 2PlSCL = second person plural subject clitic, 3SgSCL = third person singular proclitic, ATR = advanced tongue root, FACT = factative enclitic, FUT= future, IMAUX = imperfective auxiliary, NEG = negative, PE = perfect enclitic.
- (2) Degema has two basic tones, high and low, plus a downstep. For the sake of convenience, only the high tone (´) and the downstepped-high tone are marked. The downstepped-high tone is marked with an arrow (↘) pointing downwards between two high-toned syllables.
- (3) In this paper, it is appropriate to distinguish between clitics and affixes in Degema. These linguistic units are similar to the extent that (a) they are affected by internal sandhi rules, (b) they are inherently toneless, (c) they are not independent but must attach themselves to some other linguistic unit to constitute a valid utterance, and (d) they, especially proclitics and prefixes, have some inflectional properties, such as number.

However, they differ in other ways: whereas clitics undergo deletion or are optionally present in serial verb constructions because they do not constitute an integral part of the host morphology, affixes do not delete nor are they optional because they constitute an integral part of the stem morphology (see Kari (2002a) and Kari (forthcoming) for examples and a detailed discussion). Although some possessive pronouns, some object pronouns, and some adverbs, like clitics and affixes, are affected by rules of vowel harmony, they may not reasonably be called clitics or affixes. Kari (2002b: 181f) noted that, “internal sandhi rules apply between clitics and host *and affixes and stem* in the phonological word. Words that are affected by external sandhi rules belong to established word classes” (*italics added*). In other words, external sandhi rules apply between two words in a phonological phrase. Unlike affixes, these possessive pronouns, object pronouns, and adverbs do not constitute an integral part of the morphology of the immediately preceding or following word.

- (4) It appears that the \pm ATR feature of the (bound) stem spreads leftwards to the vowel prefix but rightwards to the suffix. For circumfixes, it appears that the \pm ATR spreads in both directions.
- (5) For a detailed discussion of these affixes (see Kari, 1995b; 2004; 2006).
- (6) An arrow indicating a downstep before the final consonant of the stem is placed in these words because medial consonants in connected or slow Degema speech often form part of the following syllable, if the following syllable begins with a vowel (cf. Kari, 2004: 384).
- (7) Kalabari is an Eastern Ijo language spoken in southeastern Nigeria in the Asari Toru and Akuku Toru Local Government Areas of Rivers State. It is also spoken in some parts of the Degema Local Government Area of Rivers State in Nigeria.
- (8) Because number-marking morphemes, referred to as prefixes by Kari (2004: 93ff), can be present in one instance but absent in another, the label ‘prefixes’ may not be appropriate. If these elements were prefixes, they should not undergo deletion, as they would constitute an integral part of the morphology of the stem to which they attach. The fact that these number-marking morphemes are deleted when they modify nouns suggests that they are clitics rather than prefixes. This line of argument is pursued by Kari (forthcoming) in defense of the clitic status of subject markers. The behavior of so-called ‘prefixes’ of demonstrative nominals, and even those of modifying derived nominals that follow nouns (see Kari, 2004: 87ff), which are phonologically dependent like affixes but syntactically deletable like independent words, calls for a review of the range of items labeled ‘clitics’ in Degema.
- (9) Elugbe’s (1986) use of the term ‘pronominal’ refers to what Kari (1997) terms ‘proclitics’. Kari (2003) argued that proclitics (subject clitics) in Degema are not pronouns, nor are they derived from pronouns, nor are they prefixes (see Kari forthcoming).
- (10) Previous research has indicated that in Degema, proclitics occur before verbs (main or auxiliary) and preverbal adverbs (Kari, 2003; 2004, among others). We have tentatively accepted the claim made by some reviewers that so-called ‘preverbal adverbs’ might just be auxiliaries, pending further determination of the status of these items. If these reviewers are correct, then proclitics in Degema occur only before verbs. In this case, the low host selectivity that was once used to characterize proclitics will no longer apply, since they now appear to occur only before one morphosyntactic category – verbs. Even with high host selectivity, proclitics in Degema will still not qualify as prefixes because they undergo deletion in certain constructions, suggesting that proclitics do not form an integral part of the verb morphology, unlike noun class prefixes (see Kari, forthcoming for a detailed argumentation in defense of the clitic status of subject markers).

- (11) No logical reason appears to explain why the first person singular, second person plural, and third person plural object and possessive pronouns, and those of the modifying negative adverb, should be determined by the harmonic set to which the vowels in neighboring morphemes belong, but not other words in the same category. The conclusion that can be drawn from the behavior of these words in particular (and the categories they belong to in general) is that they are gradually losing their status as independent words.

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